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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,303	01/26/2001	Aaron C. Bernstein	UNM-549-UT	7658

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EXAMINER

NGUYEN, MICHELLE P

ART UNIT PAPER NUMBER

2851

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/771,303

Applicant(s)

BERNSTEIN ET AL.

Examiner

Michelle Nguyen

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because the term "comprising" should not be used therein. Correction is required. See MPEP § 608.01(b).

### ***Drawings***

2. The drawings are objected to for the following reasons:
  - (a) They fail to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 10 (see page 10, line 25).
  - (b) In Fig. 4, "Figure 4" is not legible.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,972,075 to Hamada et al. in view of U.S. Patent No. 5,859,424 to Norton et al.

With regard to claims 1 and 13, Hamada et al. disclose a Fourier moiré generating apparatus for wavefront sensing, said apparatus comprising:

two moiré gratings (gratings 8, 9) in an optical path (see Col. 3, lines 33-6, Col. 6, lines 64-8, Col. 7, lines 12-4, Fig. 12);

means (lens 6) for optically Fourier transforming a moiré deflectogram produced by said gratings, the Fourier transform means following said gratings in said optical path (see Col. 8, lines 56-60, Fig. 12); and

a detector (photodetector 7) receiving an image through said transform means.

Hamada et al. do not teach a variably transmitting optical means, particularly an apodized optical means, following said transform means in said optical path. However, Norton et al. teach adding a variably transmitting optical means (apodizing filter 50) at any position along a light path for minimizing the measurement spot size (see Col. 5, lines 42-5, 61-7, Col. 6, lines 28-33, Fig. 1A). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add to the wavefront sensor of Hamada et al. a variably transmitting optical means, as taught by Norton et al., that follows the transform means in the optical path such that the detector receives an image through the optical means for minimizing the measurement spot size.

With regard to claim 2, Norton et al. teach said optical means as discussed above with respect to claim 1 to comprise a transmission filter (see Col. 6, lines 28-56, Fig. 1A).

With regard to claims 3 and 15, Norton et al. teach said transmission filter as discussed above with respect to claims 2 and 13, respectively, to comprise a transmissive optic encoding intensity information (see Col. 5, lines 42-67). It is understood that when added to the wavefront sensor of Hamada et al., the transmission filter encodes intensity information upon said moiré deflectogram as a function of fringe angle (see Hamada et al., Col. 6, lines 61-8).

With regard to claims 4-10, Norton et al. teach said optical means as discussed above with respect to claim 1 to generate a transmission function, but do not specify the shape or orientation of the function (see Col. 4, line 53 to Col. 5, line 15). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the optical means of Norton et al. such that it generates a transmission function having a shape and orientation as set forth in the claims for reducing diffraction tails, and effectively mitigating sharp transmittance discontinuities (see also Col. 10, line 47 to Col. 11, line 24).

With regard to claims 11 and 16, Hamada et al. teach said transform means as discussed above with respect to claims 1 and 13, respectively, to comprise a lens (see Fig. 12).

With regard to claims 12 and 14, Norton et al. teach said optical means as discussed above with respect to claims 1 and 13, respectively, to comprise an apodized slit (see Fig. 1A).

With regard to method claims 17-32, the structure of the wavefront sensor as discussed above with respect to claims 1-16 renders the steps set forth in the method claims inherent to the operation of the wavefront sensor.

**Conclusion**

5. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 6,313,473 to Lin et al.

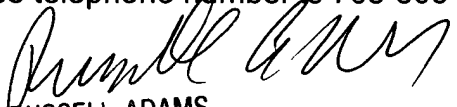
U.S. Patent No. 5,902,994 to Lisson et al.

U.S. Patent No. 5,192,982 to Lapucci

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

  
RUSSELL ADAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

mpn  
April 10, 2003